

**Disclosure FIS8-2002-0362**

Prepared for and/or by an IBM Attorney - IBM Confidential

Created By: Wenjie Li Created On:

Last Modified By: Wenjie Li Last Modified On:

Required fields are marked with the asterisk (\*) and must be filled in to complete the form.

**Title of disclosure (in English)**

Negative photoresist composition with polymers containing sulfonamide structure

**Summary**

Status	Submitted
Final Deadline	
Final Deadline Reason	
Processing Location FIS	
Functional Area	(DKF002) DKF002 ... DAVAR/Hafferon: Photoresist
Attorney/ Patent Professional	Steven Capella/Fishkill/IBM
IDT Team	Allen H Gabor/Fishkill/IBM
Submitted Date	
*Owning Division	MD
Incentive Program	
Lab	
Technology Code	101J1
PVT Score	To calculate a PVT score, click on "Patent Value Tool" in the action bar.

**Inventors with a Blue Pages entry**

Inventors: Wenjie Li/Fishkill/IBM, Pushkara Rao Varanasi/Fishkill/IBM

Inventor Name	Inventor Serial	Div/Dept	Inventor ID	Inventor Name
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**Inventors without a Blue Pages entry****IDT Selection**

Attorney/Patent Professional: Steven Capella/Fishkill/IBM

IDT Team: Allen H Gabor/Fishkill/IBM

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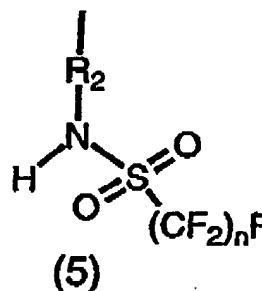
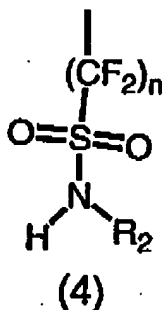
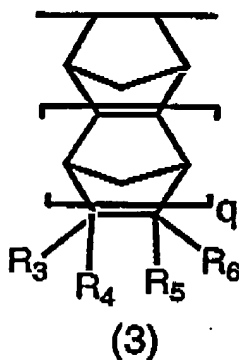
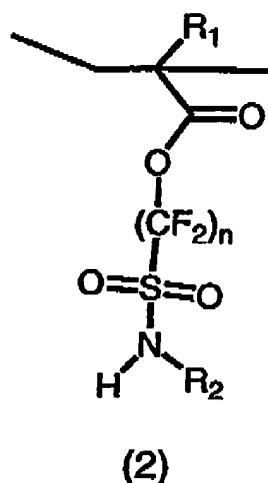
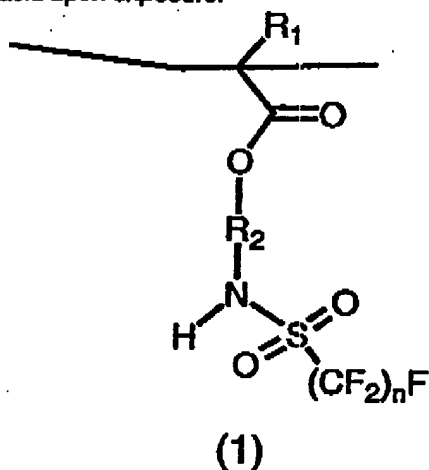
**\*Main Idea**

1. Describe your invention, stating the problem solved (if appropriate), and indicating the advantages of using the invention.

This disclosure describes a negative resist composition containing polymers with sulfonamide structure for 193/157 application. The sulfonamide functionality offers solubility in aqueous base and possibly crosslinking with suitable crosslinker.

2. How does the invention solve the problem or achieve an advantage, (a description of "the invention", including figures inline as appropriate)?

A negative photoresist composition contains polymers with sulfonamide structure having a repeating unit represented by following formulae (1)-(3), a crosslinking agent and a photoacid generator which generates acid upon exposure.



Wherein R1 represents hydrogen, CH3, CF3, CN

R2 represents linear and branched alkyl, linear and branched haloalkyl, substituted and unsubstituted aryl, substituted and unsubstituted aralkyl, all these groups optionally contain -O-, -C(O)-, -C(O)O-, or any combinations

R3, R4, R5, R6 independently represent hydrogen, linear or branched alkyl, or a sulfonamide group, with the proviso that at least one of them is a pendent sulfonamide group of formulae (4) and (5)

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n is an integer from 1 to 6, preferably 1-3, most preferably 1

q is an integer from 1 to 3

The polymer optionally contains other groups such as alcohol, fluoroalcohol for better crosslinking efficiency

The crosslinking agent may be any suitable crosslinking agent known in the negative photoresist art that is otherwise compatible with the other components of the resist composition. The crosslinking agent preferably acts to crosslink the polymer component in the presence of a generated acid. Preferred crosslinking agents are glycoluril compounds such as tetramethoxymethyl glycoluril, methyl propyl tetramethoxymethyl glycoluril, methylphenyl tetramethoxymethyl glycoluril, available under the Powderlink trademark from American Cyanamid Company.

3. If the same advantage or problem has been identified by others (inside/outside IBM), how have those others solved it and does your solution differ and why is it better?  
No

4. If the invention is implemented in a product or prototype, include technical details, purpose, disclosure details to others and the date of that implementation.  
No

**\*Critical Questions (Questions 1-9 must be answered in English)**

**\*Question 1**

On what date was the invention workable?

Please format the date as MM/DD/YYYY

(Workable means i.e. when you know that your design will solve the problem)

**\*Question 2**

Is there any planned or actual publication or disclosure of your invention to anyone outside IBM?

☐ Yes  
☒ No

If yes, Enter the name of each publication or patent and the date published below.

Publication/Patent:

Date Published or Issued:

Are you aware of any publications, products or patents that relate to this invention?

☐ Yes  
☒ No

If yes, Enter the name of each publication or patent and the date published below.

Publication/Patent:

Date Published or Issued:

**\*Question 3**

Has the subject matter of the invention or a product incorporating the invention been sold, used internally in manufacturing, announced for sale, or included in a proposal?

☐ Yes  
☒ No

Is a sale, use in manufacturing, product announcement, or proposal planned?

☐ Yes  
☒ No

If Yes, identify the product if known and indicate the date or planned date of sale, announcements, or proposal and to whom the sale, announcement or proposal has been or will be made.

Product:

Version/Release:

Code Name:

Date:

To Whom:

If more than one, use cut and paste and append as necessary in the field provided.

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**\*Question 4**☐ Yes  
☒ No

Was the subject matter of your invention or a product incorporating your invention used in public, e.g., outside IBM or in the presence of non-IBMers?

If yes, give a date. Please format the date as MM/DD/YYYY

**\*Question 5**☐ Yes  
☒ No

Have you ever discussed your invention with others not employed at IBM?

If yes, identify individuals and date discussed. Fill in the text area with the following information, the names of the individuals, the employer, date discussed, under CDA, and CDA #.

**\*Question 6**☐ Yes  
☒ No  
☐ Not sure

Was the invention, in any way, started or developed under a government contract or project?

If Yes, enter the contract number

**\*Question 7**☐ Yes  
☒ No  
☐ Not Sure

Was the invention made in the course of any alliance, joint development or other contract activities?

If Yes, enter the following:

Name of Alliance, Contractor or Joint Developer

Contract ID number

Relationship contact name

Relationship contact E-mail

Relationship contact phone

**\*Question 8**☐ Yes  
☒ No

Have you, or any of the other inventors, submitted this same invention disclosure or similar invention disclosure previously?

If Yes, please provide disclosure number below:

**\*Question 9**☐ Yes  
☒ No

Are you, or any of the other inventors, aware of any related inventions disclosures submitted by anyone in IBM previously?

If Yes, please provide the docket or disclosure number or any other identifying information below:

**Question 10**

What type of companies do you expect to compete with inventions of this type? Check all that apply.

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- ☐ Manufacturers of enterprise servers
- ☐ Manufacturers of entry servers
- ☐ Manufacturers of workstations
- ☐ Manufacturers of PC's
- ☐ Non-computer manufacturers
- ☐ Developers of operating systems
- ☐ Developers of networking software
- ☐ Developers of application software
- ☐ Integrated solution providers
- ☐ Service providers
- ☒ Other (Please specify below)  
Manufacturers of photoresists

**Question 11**

If the invention relates to a product or service that is outside the scope of your business unit, please recommend IBM business unit(s), IBM location(s) or individual(s) within IBM that you think would provide a good evaluation of your invention:

**Patent Value Tool (Optional - this may be used by the inventor and attorney to assist with the evaluation)**  
(The Patent Value tool can be used by the inventor(s) to determine the potential licensing value of your invention.)

**Market**

What is the anticipated annual market size (in dollars) that will be captured by your invention?

**CLAIMS**

**Question 1 - How new is the technical field?**

**Question 2 - How central is the invention to the product(s) which might be expected to contain the invention?**

**Question 3 - What is the scope of the claim?**

**PORTFOLIO NEED**

What are the portfolio needs in the area of your invention?

**EXPLOITATION & ENFORCEMENT**

**Question 1 - How easily can the use of the invention by a competitor be detected?**

**Question 2 - How easily can the use of the invention be avoided by a competitor?**

**BUSINESS VALUE**

**Question 1 - What percentage of the companies producing products in the field of this invention might use this invention?**

**Question 2 - What is the value of this patent to current or anticipated Alliance Activity between IBM and other companies?**

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**Question 3 - What is the value of this patent to current or anticipated Technology Transfer Activity between IBM and other companies?**

**Question 4 - Does it result in prestige to IBM?**

**Post Disclosure Text & Drawings**

Enter any additional information relating to this disclosure below:

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(Form Revised 12/17/97)